

Applicant: Steinemann, S.  
Application Serial No.: Unassigned  
Filing Date: Herewith  
Docket No.: 1409-2 RCE/CON  
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### **REMARKS/ARGUMENTS**

The application has been amended. Claim 1-10 have been canceled. New claims 11-21 have been added.

The present invention relates to a binary alloy comprising titanium and zirconium for the production of surgical implants, such as implants for dental surgery.

The binary alloy of the present invention is a single-phase alloy. The single-phase alloy is obtained by heating the alloy above the alpha-beta transition temperature and then cooling the alloy rapidly. Single phase means that the material is perfectly homogenous even after cooling, resulting in excellent cold processing characteristics, especially excellent ductility.

These characteristics, namely, good fluidity, i.e. castability, sufficient mechanical strength, hardness, tissue compatibility and excellent ductility make the alloy especially suitable for dental implants.

The art cited during the prosecution of the parent application neither discloses nor suggests an alloy according to the present invention.

GB 1,305,879 claims a surgical or dental implant comprising 25 to 75% by weight of zirconium and 25 to 75% by weight of titanium. GB '879 does not disclose, teach or suggest rapidly cooling after hot forging.

U.S. Patent No. 5,169,597 to Davidson ("Davidson") describes a ternary alloy comprising 13 wt% niobium, 74 wt% titanium, and 13wt% zirconium. In contrast to binary alloys, ternary

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never form single-phase systems (see for example column 5, lines 50-57 of Davidson: niobium acts to stabilize the  $\beta$ -phase, so that a greater proportion of the  $\beta$ -phase is present in the alloy. That means that at least two phases are present.

The art pre-dating GB '879 which was filed in 1971, is directed toward alloys including at least three metallic components, while GB '879 was directed toward an alloy including only two metallic components, titanium and zirconium. Davidson, which was filed well after GB '879 in 1992, was still working with a ternary alloy. Given these divergent teachings, one of skill in the art would have no motivation to combine these references.

Assuming, *arguendo*, that one skilled in the art combined GB '879 with Davidson, one would not achieve the present invention. Ternary alloys, when treated as disclosed in Davidson never form single-phase systems. There are at least two phases present. Therefore, no alloy according to the present invention with a binary single phase would result.

Since one skilled in the art would have no motivation to combine GB '879 with Davidson and that even if combined the combination fails to teach or suggest the present invention, Applicants respectfully submit that the present invention is patentable over these cited references.

It is respectfully submitted that the application is in condition for examination. Favorable action by the Examiner is respectfully solicited.

Should the Examiner wish to discuss this application in further detail, the Examiner is invited to contact Applicant's undersigned attorney by telephone at (973) 331-1700.

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Respectfully submitted,

A handwritten signature in cursive script, reading "Christina L. Warrick". The signature is written in dark ink and is positioned above a horizontal line.

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